

REMARKS

Applicants shall supply a set of Formal Drawings upon receiving a Notice of Allowance in this application.

Claims 2-4 and 27-29 had been previously canceled. Claims 1, 19, 26, 30 and 36 are currently amended. Claims 5, 8, 11, 20, 23, 31-35 and 37-42 had been previously amended. Claims 6, 7, 9, 10, 12-18, 21, 22, 24 and 25 are as originally filed.

Claim Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1, 5-26 and 30-42 under 35 U.S.C. § 102(e) as being anticipated by United States Patent No. 6,671,724 issued to S. J. Pandya et al. on December 30, 2003, filed March 21, 2000.

It is respectfully submitted that applicants believe that the amendments to the claims are such as to further clarify applicants' unique invention and have also obviated the Examiner's grounds for rejection.

Briefly, applicants' unique invention is directed at overcoming problems and limitations of prior known policy-based network management (PBM) arrangements such that disclosed in the Pandya et al. patent. This is realized by applicants through integrating the "what" and "how" of PBM in a single framework that enables a system administrator to specify service-level QoS (quality of service) goals for automatic enforcement instead of, or in addition to, policy rules or procedures. Automatic enforcement of the specified QoS goals is realized by applicants through the execution of policy goal-logic, i.e. goal rules or procedures related to the policy management, without the client or system administrator having to specify the policy goal-logic in the form of rules and/or procedures.

Applicants' in one embodiment of their invention, employ a management server including a graphical interface that allows a user, e.g. an administrator, to easily specify parameters for predefined types of service-level QoS goals. A QoS goal is defined by specifying a client, a service, and a QoS expression. A QoS expression is a proposition that indicates the client's desired range of values for some QoS metric, e.g. service response time or service availability. The state of the network is monitored and one or more defined QoS goals are selected for evaluation in a continuous process. The QoS delivered for the selected goal is determined and compared to the selected QoS goal.

Then, prescribed actions are taken or not depending whether the delivered QoS is equal to the selected QoS goal. If not, and the delivered QoS exceeds the selected QoS goal, a set of actions is automatically determined and executed by the policy goal-logic to reduce network resources, i.e. network element resources, assigned to the client and service of the selected goal. Similarly, if the delivered QoS is worse than the selected QoS goal, a set of actions is automatically determined and executed by the policy goal-logic to increase network resources assigned to the client and service of the selected goal. (See page 1, line 28 through page 2, line 18 of applicants' specification).

More specifically, applicants' unique invention allows a system administrator to specify a set of goals and objectives that are stored in a goal repository, describing the "what" of service-level QoS management. For each goal G in some objective H specified, a policy is automatically selected by the policy goal-logic such that the effect of executing P(G) is to enforce goal G to the extent that is feasible given the available networked resources. Thus, the invention accepts only a limited set of goals for which the embodiment of the invention contains the policy goal-logic needed to enforce those goals. The "how" of enforcing the goals is specified by the policy goal-logic contained in the embodiment in the form of a general purpose computer program. A simplified example of policy goal-logic is given in TABLE 2 of FIG. 2.

In this embodiment of the invention there is an explicit distinction between the "what" and "how" of PBM and each one is an integral part of a policy framework and a PBM solution which enables the following:

- Directly specifying (and modifying on-line) clients' service-level QoS goals as part of the network management objective;
- Easily reporting and verifying the effectiveness of policy-based management for achieving these goals;
- Providing feedback so that policy goal-logic can be modified, either manually off-line or automatically on-line to achieve desired QoS goals;
- Enabling service providers and clients to establish service-level agreements (SLA's) based on goals and objectives that are mutually understood. As an integral part of the policy specification, such SLA's enable an SLA-based revenue model for service providers, as opposed to the flat-rate pricing that is

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presently the norm for service providers. (See page 5, line 10 through page 6, line 2 of applicants' specification).

Applicants' claim 1 has been amended to further clarify this important distinction between the "what" and "how" of PBM and to clearly indicate that it is policy goal-logic that is being executed. To this end, claim 1, as currently amended, now calls for:

"1. A method for use in a policy goal-based management system employing service level goals for a computer network having one or more network resources comprising the steps of:

enabling a system administrator to specify predefined service level goals for said computer network;

specifying a prescribed quality of service goal for a prescribed client and prescribed service;

executing policy goal-logic to automatically enforce said specified quality of service goal, wherein said policy goal-logic is comprised in a general purpose computer program;

monitoring a delivered quality of service for said specified quality of service goal being executed by said policy goal-logic, said monitoring a delivered quality of service including continuously monitoring states of said computer network resources assigned to said prescribed client and said prescribed service;

determining if said delivered quality of service is different than said specified quality of service goal; and

if so, said policy goal-logic executing prescribed actions regarding network resources assigned to said client for said prescribed service, wherein said actions are intended to adjust said delivered quality of service toward being equal to said specified quality of service goal,

wherein said policy goal-action executes said prescribed without the system administrator having to specify said prescribed actions to said policy goal-logic intended to enforce said specified quality of service goal."

Surely, Pandya et al. do not disclose any such combination of steps.

It appears that Pandya et al., in their apparatus, are concerned with managing a distributed system via a policy-based framework. This is significantly different from applicants' unique invention directed at specifying and assuring quality of service in computer networks by employing policy goal-logic.

Both applicants and Pandya et al. use the term "policy" in their disclosures. However, it is respectfully submitted that the actual meaning of the term 'policy" is significantly different in each application.

In Pandya et al. a "policy" is a rule of the type, if <condition> then <action>, which is employed in the prior art type systems as described in applicants' background of

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the invention (see page 1, lines 11-26 of applicants' specification). These "policy rules" are specified by a human administrator based on a certain business objective. Thus, the system administrator has to be capable of coming up with appropriate policy rules. In Pandya et al. agents (modules) are referred to as being used to enforce the policy rules by monitoring network events, tracking operational and congestion status, etc.

It is noted, although Pandya et al. indicates that in their system the agents are responsible for enforcing policy rules, monitoring network events "ultimately to ensure that the network resources are used in a manner consistent with underlying business goals", they fail to specify how the goals are specified, measured, or verified. This a problem with the prior art systems as indicated in applicants' background of the invention (again see page 1, lines 11-26 of applicants' specification).

Again, it should be noted that applicants' unique invention is concerned with obtaining the desired QoS and automatically adjusting the computer network resources to obtain it. Thus, if the monitored QoS in the computer network is worse than desired, applicants' invention automatically executes the policy goal-logic to adjust the computer network resources in order to raise the QoS up to the desired level. Similarly, if the monitored QoS is greater than the desired QoS, applicants' unique invention again automatically executes the policy goal-logic to adjust the computer network resources to lower the monitored QoS to the desired level. Applicants' respectfully submit that Pandya et al. nowhere show, teach or suggest any such technique nor any arrangement for effecting applicants' unique invention, as now defined in claim 1, as currently amended..

It is therefore again submitted that Pandya et al. fail to describe any method or apparatus for automatically executing policy goal-logic to adjust computer network resources to realize a desired QoS as now defined in applicants' claim 1, as currently as indicated above.

Additionally, it is noted that in applicants' unique invention, the policy goal-logic is comprised in a general purpose computer program that executes the policy goal-logic automatically. It is the policy goal-logic in applicants' unique invention that executes

"prescribed actions regarding network resources assigned to said client for said prescribed service, wherein said actions are intended to adjust said delivered quality of service toward being equal to said specified quality of service goal, wherein said policy goal-action executes said prescribed without the system

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administrator having to specify said prescribed actions to said policy goal-logic intended to enforce said specified quality of service goal."

Regarding claim1 of this application, the Examiner has referred to several sections of the Pandya et al. patent.

Specifically, Column 2, lines 41-49 of Pandya et al. specifically refers to <if condition, then action> type policy rules, which is noted as prior art in applicants' specification.

Column 4, lines 34-46 of Pandya et al. refers to "agents", which are used to monitor events, track operational and congestion status, etc. No mention is made of monitoring specified service levels or objectives as defined in applicants' claim 1, as currently amended.

Column 6, lines 47-59 of Pandya et al. again indicates that the agents are responsible for enforcing policy rules, monitoring network events, etc. and such is "ultimately to ensure that the network resources are used in a manner consistent with the underlying business and other goals". What Pandya et al. fail to do is specify how goals are specified, measured or how any verification is realized. Applicants have indicated in their background that such failure is a problem of the prior art arrangements such as Pandya et al. disclose.

Column 7, lines 54-58 of Pandya et al. indicates that the agents monitor network resources and activities of the specific device they are associated with. The monitoring in applicants claimed invention is of the delivered service level on a per-user, per-service basis. Pandya et al. again fail to describe any such monitoring as is done in applicants' invention as now defined in claim 1, as currently amended.

Again, it is submitted that Pandya et al. fail to disclose any such use of policy goal-logic as defined in applicants' claim 1, as currently amended.

In light of the above, it is respectfully submitted that claim 1, as currently amended, is allowable over the rejection under 35 U.S.C. § 102(e) based on the Pandya et al. patent.

Moreover, in light of the significant differences between applicants' unique invention and the Pandya et al. apparatus, it is further submitted that applicants' invention as now defined in claim 1 would not have been obvious to one possessing ordinary skill

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in the art upon reading the Pandya et al. patent. Consequently, it is believed that claim 1, as currently amended, is also allowable under 35 U.S.C § 103.

Claim 26, as currently amended, is an apparatus claim of similar scope as claim 1, as currently amended, and is believed allowable for the same reasons as claim 1, as currently amended, as indicated above.

The Examiner has made additional comments regarding the rejection under 35 U.S.C. § 102(e) of the other remaining claims in this application.

Point 9: Column 16, lines 34-44 refers to an example in the Pandya disclosure, which is believed to be of the <condition, action> type policy enforcement of the prior art. The bandwidth distribution is a policy condition with the redistribution being the action. In applicants' invention, the goal would be "For John using Web service, the response time should be less than 1 second". The actual bandwidth distribution needed to achieve this goal would be part of the policy program that includes real time monitoring of the delivered service response time to John. This quite different from what Pandya discloses.

Point10: Refer to the comments regarding Column 4, lines 34-46 of Pandya et al. noted above.

Point 11: Same as point 10.

Point 12: Column 16, lines 46-56: Column 17, lines 36-59: Refer to explanation in Point 9 above.

Point 13: Column 14, lines 52-67: The difference in applicants' invention compared to the Pandya et al. arrangement is not in that something is stored and something is updated, but in "what is stored and updated". In the Pandya et al. arrangement, policy rules are stored in the control point and updated. In applicants' invention, per-user per-application based Quality-of-Service goals are stored and updated by the administrator.

Point 14: Same as Point 13 above.

Point 15: Column 8, lines 32-64. This section in Pandya et al. talks about business goals of an enterprise and gives examples. It specifically mentions, for instance on line 50 .."Policies could be written to specify a desired level of service". However, it does not say that the service levels are themselves specified by the administrator. In fact, the

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administrator has to come up with the policies based on his knowledge of the service-levels. This becomes more clear in Pandya et al. at column 8, lines 65-67, continued to column 9, lines 1-30, where it is explained how the policy rules are constructed, which are of the <if condition then action> type rules.

Point 16: See explanation for Point 13.

In any event claims 5-25 are dependent from claim 1, as currently amended, which is believed to be allowable. Since claims 5-25 include all the inventive steps of claim 1, as currently amended, they too, should be allowed over the rejection under 35 U.S.C. § 102(e) bases on the Pandya et al. patent for the same reasons as indicated above regarding claim 1, as currently amended.

Moreover, in light of the significant differences between applicants' invention as defined in claims 5-25, it is further submitted that applicants' invention as now defined in claim 1 would not have been obvious to one possessing ordinary skill in the art upon reading the Pandya et al. patent. Consequently, it is believed that claim 5-25 are also allowable under 35 U.S.C § 103.

Claims 30-42 are dependent from claim 26, as currently amended, which is believed to be allowable. Since claims 30-42 include all the inventive elements of claim 26, as currently amended, they too, should be allowed over the rejection under 35 U.S.C. § 102(e) based on the Pandya et al. patent.

Moreover, in light of the significant differences between applicants' invention as defined in claims 30-42, it is further submitted that applicants' invention as now defined in claim 26 would not have been obvious to one possessing ordinary skill in the art upon reading the Pandya et al. patent. Consequently, it is believed that claims 30-42 are also allowable under 35 U.S.C § 103.

Claims 1, 5-26, and 30-42 remain in this application.

In any event, it is submitted that applicants' invention as defined by the claims in this application was conceived and reduced to practice prior to the filing date of March 21, 2000 of the U.S. Patent No. 6,671,724. Therefore, it is believed that the rejection based on the U.S. Patent No. 6,671,724 should be withdrawn. A Declaration, by the inventors, under 37 CFR 1.131 showing the conception and reduction to practice prior to

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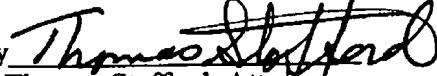
the March 21, 2000 filing date of the U.S. Patent no. 6,671,724, along with supporting evidence is being supplied herewith.

Accordingly, it is now believed that claims 1, 5-26 and 30-42 remaining in this application are in condition for allowance.

It is now believed that this application is in condition for allowance. Entry of this amendment and allowance are therefore respectfully solicited.

If there are still outstanding issued to be resolved, the Examiner is respectfully invited to call applicants' attorney, Thomas Stafford, at 727-772-4173 so that those issues may be discussed and satisfactorily resolved.

Respectfully,
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